

No. 876,728.

PATENTED JAN. 14, 1908.

J. REAGAN.

GRATE.

APPLICATION FILED MAY 28, 1907.

Fig. 1.

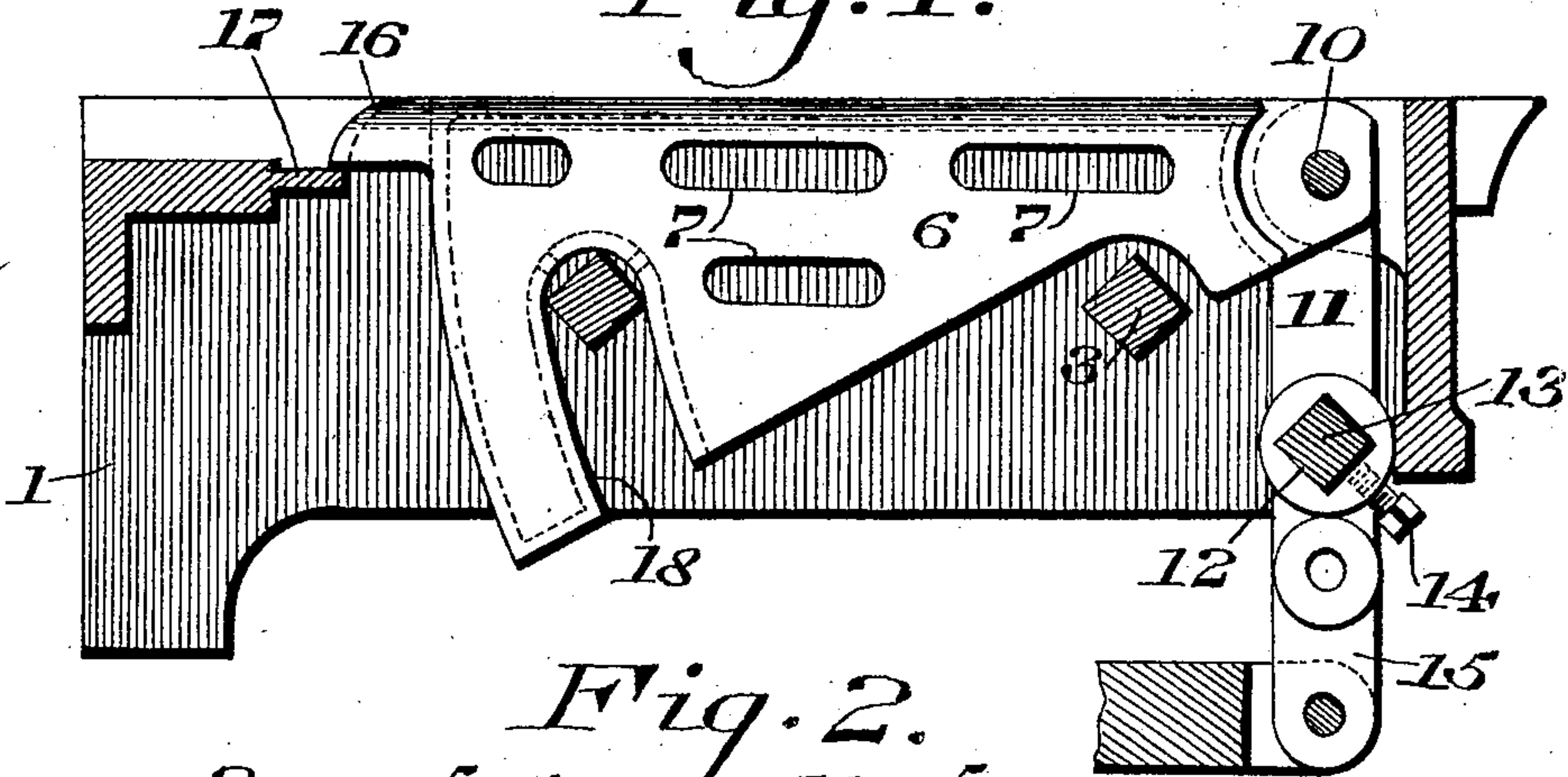


Fig. 2.

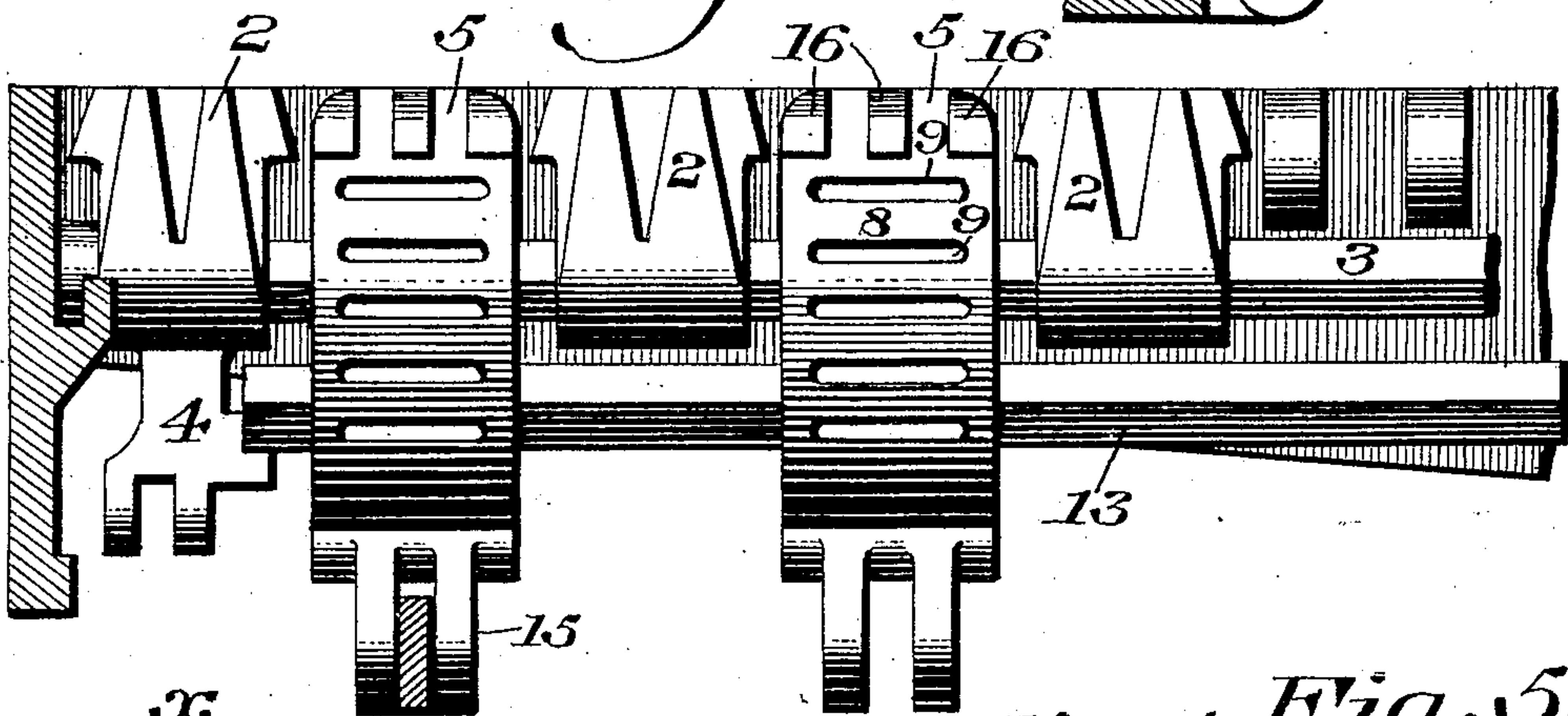


Fig. 3.

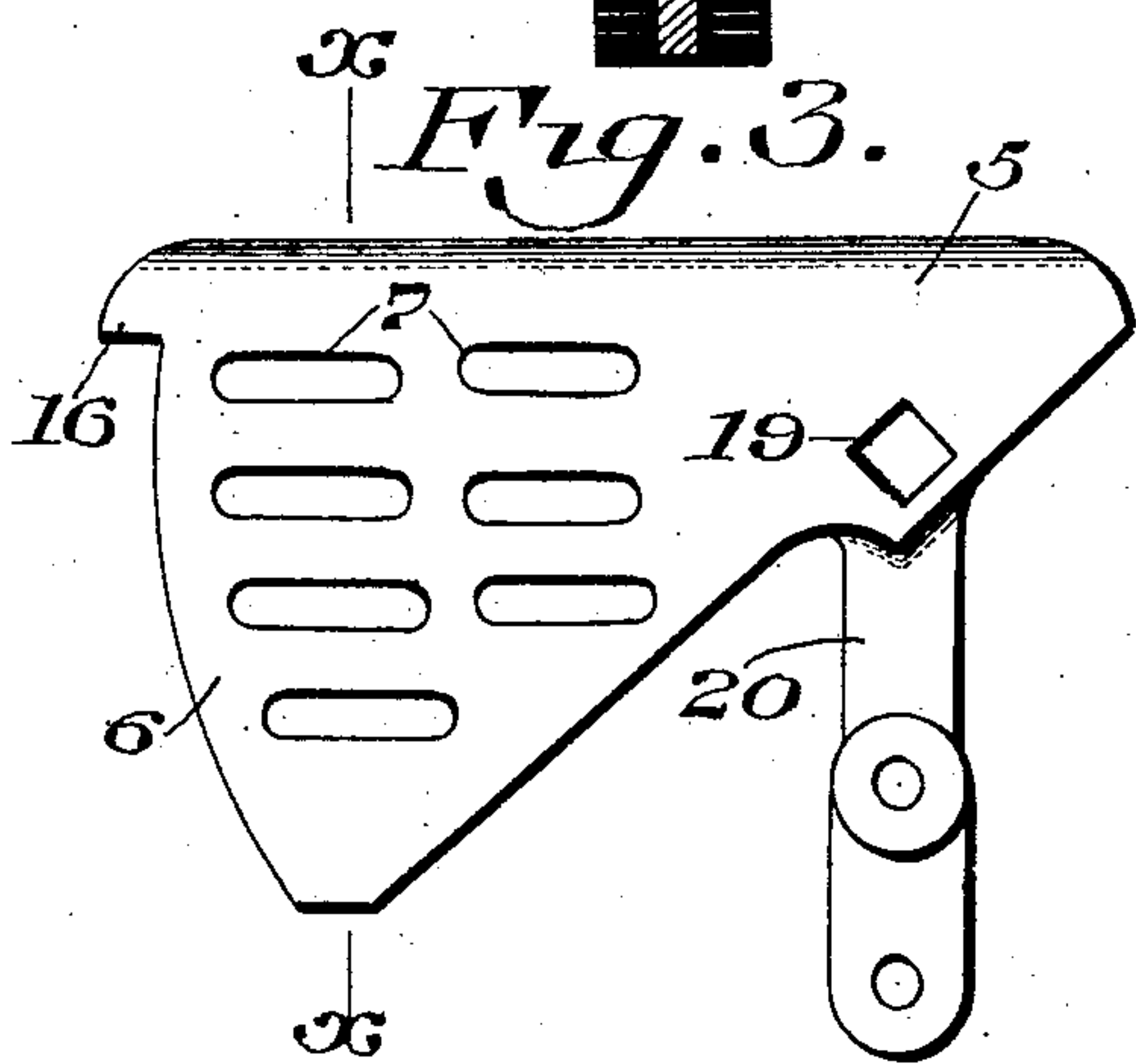
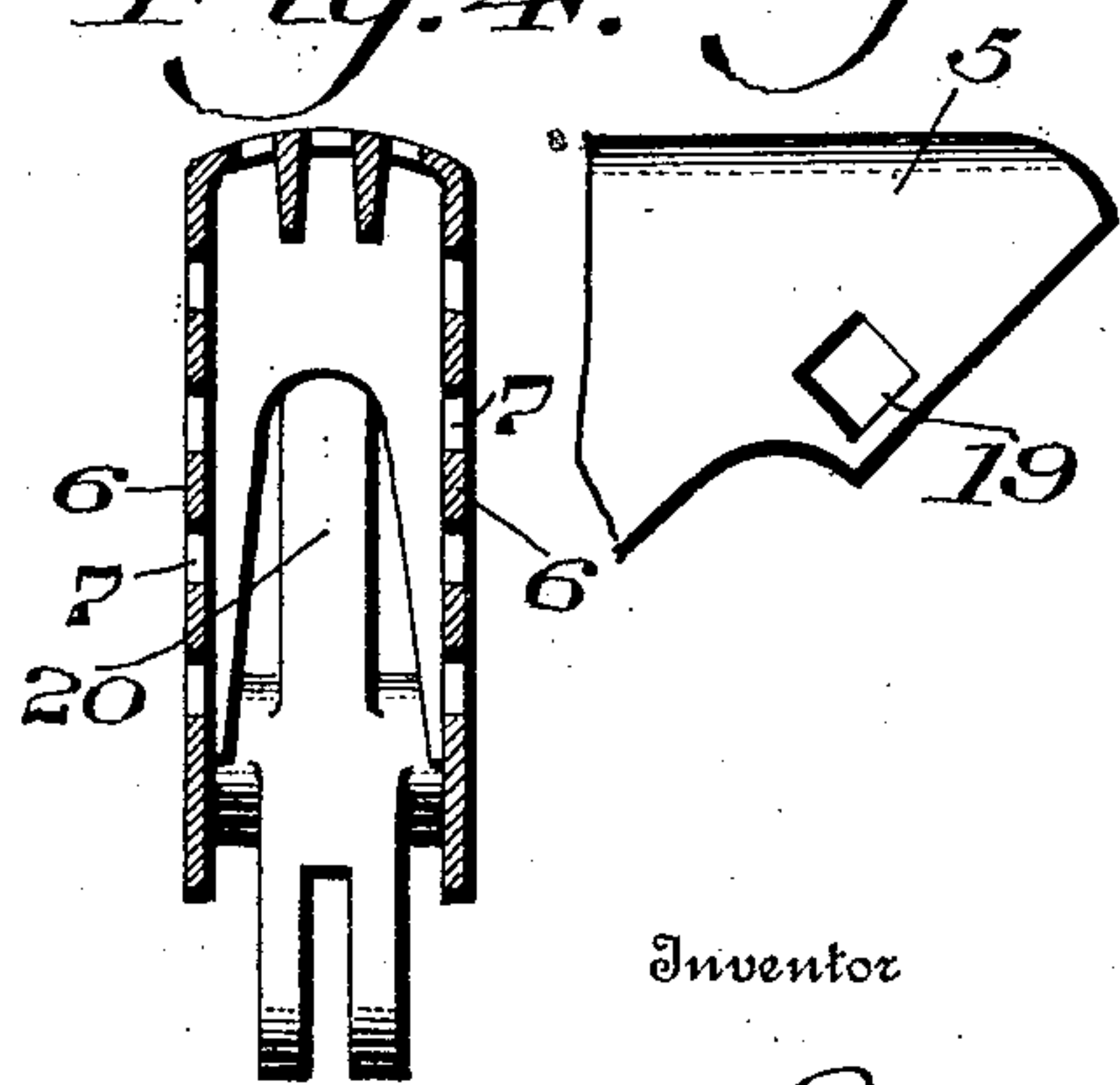


Fig. 4. Fig. 5.



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GRATE.

No. 876,728.

Specification of Letters Patent.

Patented Jan. 14, 1908.

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To all whom it may concern:

Be it known that I, JAMES REAGAN, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Grate, of which the following is a specification.

My invention relates to a new and useful shaking grate and consists in providing lifting fire bars which can be used with or without choppers.

It further consists of a novel construction of lifting fire bars whereby the coal is prevented from leaving the grate when the bars are operated.

It further consists of other details of construction, all as will be hereinafter fully set forth.

Figure 1 represents a sectional view of a portion of a grate showing a lifting fire bar in position, with a portion of the device for operating the same. Fig. 2 represents a sectional view showing the lifting fire bar in position alternately with choppers. Fig. 3 represents a side elevation of a lifting fire bar which may be used. Fig. 4 represents a sectional view on line $x-x$, Fig. 3. Fig. 5 represents an elevation of a portion of a lifting fire bar which is used in conjunction with the form shown in Fig. 3.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—I have found in shaking grates that it is necessary to provide a construction wherein there are no dead points in the fire and in which free passage of air is permitted and caused in order that a suitable draft is provided.

My present invention is designed to accomplish these results and in the drawings I have shown a construction for carrying out my invention, but it will be evident that various changes may be made which may come within the scope of my invention and I do not, therefore, desire to be limited in every instance to the exact construction as herein shown and described, but desire to make such changes as may come within the scope of my invention.

As previously stated, I provide a lifting fire bar and have shown the same as more especially adapted for use on a construction of grate such as is shown in patents granted to me on the 31st day of October, 1899, Nos. 635,807 and 635,808 in which I have shown

a stationary fire bar and a plurality of rocking choppers. This grate is practically formed in a plurality of sections as for example, three, and I desire to use my present lifting fire bar either in conjunction with the rocking choppers or not, as may be necessary. In some instances, I may alternate the lifting fire bars with the choppers, or I may make one section entirely of the lifting fire bars, the use and arrangement of the parts depending upon the conditions.

1 designates the frame or portion thereof, of a shaking grate which is of suitable construction and 2 designate choppers which are suitably mounted in order to be rocked, each of said bars being mounted upon the chopper bar 3 which is angular and one of the bars being provided with the depending portion 4 to which the rocking mechanism can be attached.

Interposed between the choppers are the lifting bars 5, the same having the sides or wings 6, with the openings or slots 7 there-through, the front and the rear side 8 being provided with the slots or recesses 9, it being noted that the slots are provided for the purpose of permitting a free passage of air there-through.

10 designates rivets or pivots carried by a suitable portion of the frame of the grate, in the present instance upon the lugs on the bridge bar and on which said lifting fire bars are supported, said lifting fire bar being provided with the depending arm 11 which is preferably integral therewith and which is provided with the angular opening 12 through which passes the connecting bar 13, which is also angular, the set screw 14 being provided, if necessary, to positively connect the arm 11 with said connecting bar 13. One of said lifting fire bars is provided with the lug 15 to which is attached any suitable means for actuating the lifting fire bars through the medium of the connecting bar 13. It will be understood that the bar is supported upon the pivot 10 adjacent one end in order that when suitably actuated, it will be raised to an angle of about 45° and the wings are so situated with respect to the choppers 2 that they will never be raised beyond the same.

16 designate lugs which may be provided upon the lifting fire bar, which are adapted to rest upon a suitable point as for example, the head block 17 in order to support the

lifting fire bar. A suitable slot 18 may be provided in the lifting fire bars to accommodate one of the rocking bars for the choppers.

In Figs. 1 and 2, I have shown the form of lifting fire bars when used in conjunction with the rocking choppers, but as previously stated, I may in some instances use a plurality of lifting fire bars without the choppers. In this construction, I preferably employ the form of fire bar 5 shown in Figs. 3, 4 and 5, only in this instance, I provide the lifting fire bar with the angular opening 19, through which a suitable connecting rod passes in order that a series of these fire bars are carried by the same connecting rod, only one of the series being supplied with the arm 20, to which the operating mechanism is attached.

The operation of the parts just described will be readily appreciated. The lifting fire bars can be suitably actuated in order that all of the same will be raised to an angle of about 45° . This will tend to throw the dirt upon the choppers 2 which can then in their turn be suitably actuated to get rid of the dirt, it being understood that the lifting fire bars will return by gravity to their normal positions when so desired.

When one section of my grate is provided with the plurality of lifting fire bars, it will be understood that the fire which is supported thereby will be forced forward, thus obviating the necessity of opening the door and using a stoke or slash bar, this being of great advantage. It will be seen that in this way I positively prevent and obviate any dead point in the fire, since the lifting fire bars throw the dirt upon the choppers, which are then rocked to get rid of the dirt as previously stated.

The wings or sides of the fire bars when raised prevent the green coal from leaving the furnace, since they form a bar for that purpose and close up any opening which might otherwise occur if these wings were not of suitable size and dimension therefor. The openings in the fire bar not only permit free passage of air, but increases the air supply, thus insuring a draft and assist in preventing any dead points in the fire. I would also call attention to the fact that my lifting fire bar by being raised at one end to about an angle of 45° is returned to its normal position by gravity, so that only one motion is given to the lifting fire bar in counter-distinction to the rocking or two motions which are given to the chopper.

Where the lifting fire bars are arranged side by side, they are operated simultaneously to take the coal or fire and throw it on the next section. This section of the fire grate can be composed of chopping and lifting bars as shown in Figs. 1 and 2, or can be composed of two lifting fire bars if desired, the advantages derived being that I obviate

the use of a stoke or slash bar above referred to and I can for example coke the coal on the first section of the grate and then throw it on the next section, repeating this operation as it is necessary. If desired, the back section can be provided with the lifting fire bars and so arranged to throw the coal front upon the middle section, the effect being the same as already described.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a shaking grate, a series of hollow lifting fire bars having perforated wings, connecting rods for said lifting fire bars, and means for actuating the same.

2. In a device of the character described, a series of hollow lifting fire bars having perforated wings, means for pivoting each of said bars adjacent one end thereof, a connecting rod for said lifting fire bars, and means for actuating the same.

3. In a device of the character described, a plurality of choppers, means for rocking the same, a plurality of lifting bars pivoted at one end and alternated with said choppers, said lifting bars having wings depending from each side of said lifting bars and means for actuating said lifting fire bars whereby one end thereof is raised.

4. In a device of the character described, a plurality of choppers, a plurality of lifting fire bars intermediate said choppers, a rocking bar for said choppers, means for actuating the rocking bar a connecting bar for said lifting fire bars, and means for actuating the latter.

5. In a device of the character described, a plurality of choppers, a connecting rod therefor, a plurality of hollow lifting fire bars intermediate said choppers, a connecting rod for said fire bars, means for actuating said choppers, means for actuating said fire bars, said fire bars having wings for preventing the escape of the coal when the fire bars are elevated.

6. In a device of the character described, a plurality of choppers, a connecting bar therefor, means for rocking said choppers, a plurality of hollow lifting fire bars, a connecting bar therefor, each of said fire bars being pivoted adjacent one of its ends and alternated with the lifting fire bars, and means for actuating said fire bars whereby one end of each thereof is elevated.

7. In a device of the character described, a hollow lifting fire bar having its fulcrum depending and mounted intermediate its length on a bar, said lifting fire bar having wings depending from each side thereof and having an opening to receive a bar, and levers for operating said lifting fire bar.

8. In a device of the character described, a lifting fire bar provided with an angular opening, said lifting fire bar having wings,

an angular rocking bar seated in said angular opening and levers suitably adapted to operate said lifting fire bar.

5 9. In a device of the character described, a series of hollow lifting fire bars pivotally mounted at one end to return to their normal position by gravity, means for actuating the same at their pivoted ends, and choppers alternated with said bars and means for giving the choppers a rocking movement.

10 10. In a device of the character described, a plurality of movably mounted choppers, and a plurality of lifting fire bars intermediate said choppers and independent means for giving to said choppers and fire bars different movements.

11. In a device of the character described, a hollow lifting fire bar having a perforated upper face and slotted wings.

20 12. In a device of the character described, a hollow lifting fire bar having a perforated upper face and slotted wings, the front and the rear side being also slotted.

13. In a device of the character described, a plurality of choppers, means for rocking the same, a plurality of hollow lifting fire bars alternating with said choppers and mounted at one end, and means for actuating said fire bars to raise one end thereof.

14. A hollow lifting fire bar for grates having a perforated upper face, and wings having suitable perforations therein.

15. A hollow lifting fire bar for grates having a perforated upper face, depending wings having suitable perforations therein, and a rear wall having perforations therein.

16. A hollow lifting fire bar for grates, having a perforated upper face, wings depending therefrom, and a rear wall having perforations therein.

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Witnesses:

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